

INTERNATIONAL SEARCH REPORT

onal Application No

PCT/IB2004/002709

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C07K14/315 C12N15/01 C12R1/46 G01N33/68

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C07K C12N C12R G01N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, BIOSIS, MEDLINE

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|---|-----------------------|
| X | US 6 303 771 B1 (LAWLOR ELIZABETH JANE ET AL) 16 October 2001 (2001-10-16) *whole document, in particular: Abstract; table 1; column 19, line 63 - column 20, line 60; example 3 and claims* | 1-6 |
| X | WO 02/077021 A (CHIRON SPA ; MASIGNANI VEGA (IT); FRASER CLAIRE (US); TETTELIN HERVE ()) 3 October 2002 (2002-10-03) cited in the application *whole document, in particular page 6, lines 13-25 and page 40* | 1-6 |
| A | US 5 981 281 A (BALTZ RICHARD HENRY ET AL) 9 November 1999 (1999-11-09) cited in the application *whole document* | |

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Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

& document member of the same patent family

Date of the actual completion of the international search

15 November 2004

Date of mailing of the international search report

02.06.2005

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INTERNATIONAL SEARCH REPORT

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category ° | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|--|-----------------------|
| A | <p>TETTELIN H ET AL: "Complete genome sequence of a virulent isolate of Streptococcus pneumoniae" SCIENCE, AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE,, US, vol. 293, no. 5529, 2001, pages 498-506, XP002218261 ISSN: 0036-8075 cited in the application *whole document*</p> | |
| A | <p>MOLLERACH MARTA ET AL: "Characterization of the galU gene of Streptococcus pneumoniae encoding a uridine diphosphoglucose pyrophosphorylase: A gene essential for capsular polysaccharide biosynthesis" JOURNAL OF EXPERIMENTAL MEDICINE, TOKYO, JP, vol. 188, no. 11, 7 December 1998 (1998-12-07), pages 2047-2056, XP002157671 ISSN: 0022-1007 cited in the application *Abstract*</p> | |

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International application No.
PCT/IB2004/002709

Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☒ Claims Nos.: 7
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
see FURTHER INFORMATION sheet PCT/ISA/210
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:
1-6 (all partially)

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-6 (all partially)

Invention 1 concerns a *Streptococcus pneumoniae* bacterium in which expression of the gene SP0005 (gene encoding the peptidyl-tRNA hydrolase (pth)) has been knocked out. Invention 1 further concerns a process for determining whether a test compound down-regulates expression of the polypeptide coded by said gene SP0005 or whether a test compound binds to the polypeptide coded by said gene SP0005..

2-101. claims: 1-6 (all partially)

Inventions 2-101 concern a *Streptococcus pneumoniae* bacterium in which expression of the gene SPnnnn has been knocked out, wherein SPnnnn corresponds, respectively, to the SPnnnn genes, other than SP0005, indicated in claim 1. Inventions 2-101 further concern a process for determining whether a test compound down-regulates expression of the polypeptides coded by said genes SPnnnn or whether a test compound binds to the polypeptides coded by said genes SPnnnn.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box II.2

Claims Nos.: 7

The subject-matter of claim 7 is not clearly characterised because the compound is only defined by the process used for its identification. Claim 7 concerns any compound obtainable by the process of claims 4 to 6.

In fact, present claim 7 encompasses such an extremely large number of possible compounds, as indicated in the description (page 3, lines 20-23), that a lack of clarity (and conciseness) within the meaning of Article 6 PCT arises to such an extent as to render a meaningful search of the claims impossible.

Consequently, no search report can be established for the subject-matter of present claim 7.

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guideline C-VI, 8.5), should the problems which led to the Article 17(2) declaration be overcome.

| Patent document cited in search report | | Publication date | Patent family member(s) | Publication date |
|---|----|---------------------|----------------------------|---------------------|
| US 6303771 | B1 | 16-10-2001 | EP 1032591 A1 | 06-09-2000 |
| | | | JP 2002503445 T | 05-02-2002 |
| | | | WO 9926970 A1 | 03-06-1999 |
| | | | US 2003232373 A1 | 18-12-2003 |
| | | | US 2002058799 A1 | 16-05-2002 |
| WO 02077021 | A | 03-10-2002 | CA 2439431 A1 | 03-10-2002 |
| | | | EP 1373513 A2 | 02-01-2004 |
| | | | WO 02077021 A2 | 03-10-2002 |
| | | | JP 2005503119 T | 03-02-2005 |
| | | | US 2005020813 A1 | 27-01-2005 |
| US 5981281 | A | 09-11-1999 | AU 5793798 A | 03-07-1998 |
| | | | CA 2274311 A1 | 18-06-1998 |
| | | | EP 0950108 A1 | 20-10-1999 |
| | | | WO 9826072 A1 | 18-06-1998 |
| | | | US H2019 H1 | 02-04-2002 |
| | | | US 6071724 A | 06-06-2000 |
| | | | US 6271000 B1 | 07-08-2001 |
| | | | US 6074847 A | 13-06-2000 |
| | | | US 5958730 A | 28-09-1999 |
| | | | US H2023 H1 | 07-05-2002 |
| | | | US H2070 H1 | 01-07-2003 |
| | | | US 6268175 B1 | 31-07-2001 |
| | | | US 5910580 A | 08-06-1999 |
| | | | US 6136557 A | 24-10-2000 |
| | | | US 6060282 A | 09-05-2000 |
| | | | US 6350866 B1 | 26-02-2002 |
| | | | US H2071 H1 | 01-07-2003 |
| | | | US 6162617 A | 19-12-2000 |